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Abstract of DE 19909286 (A1)

The system has a cooling circuit consisting of a compressor (14), a condenser (16), an expansion element (18) and an evaporator (20), an engine coolant circuit (24) and a liquid/liquid heat exchanger (22) for transferring heat from the coolant in the refrigeration circuit to the refrigerant in the refrigeration circuit. For transferring heat the heat exchanger operates as an evaporator in the refrigeration circuit and the refrigeration circuit acts as a heat pump. A heating arrangement is provided for separate heating of the coolant.

Description

The invention relates to a heating or an air conditioning system for a motor vehicle in accordance with the preamble of Claim 1.

A such air conditioning system is 36 35 353 known from the DE, with which the air conditioner can become also operated as heat pump, whereby the energy, which must become the refrigerant cycle supplied, originates from the loss energy of the motor vehicle, thus from the heat energy of the hot refrigerant, which would become otherwise unused over the radiator of the motor vehicle to the environment discharged. In addition a liquid one/a liquid heat exchanger between the cold circle and the engine cooling circuit is provided, which serve the air conditioner in the heating operation as evaporator for the refrigerant, whereby the energy becomes the evaporation of the refrigerant the hot engine coolant removed, so that by the utilization of the cooling agent energy the refrigerant evaporated.

A such air conditioner, which can become also as heat pump operated and for the heating that the passenger compartment which can be supplied air serves, has the advantages that shorter conduits are in the refrigerating cycle possible that a shorter heating-up time of the engine is more achievable, whereby a better efficiency and a smaller pollutant output can become achieved, and it is an earlier heating operation due to the heat pump effect possible. Beyond that clock valves for the cooling agent flow control in the heating cycle can be void and it are a control of the engine temperature over the refrigerant cycle possible.

On the basis of this state of the art it is object of the invention to improve the known heating or air conditioning system.

This object becomes dissolved by a system with the features of the claim 1.

Heating mediums provided are according to invention to the separate heating of the refrigerant. Thus a faster heating of the refrigerant becomes achieved, whereby the engine can heat quicker and thus a better efficiency and a smaller pollutant output can become achieved. Advantageous embodiments of the invention are subject-matter of the dependent claims.

In the following the invention becomes in detail explained on the basis an embodiment bottom reference on the drawing. In the drawing show:

Fig. 1 a block diagram of a heating or an air conditioning system according to invention;

Fig. 2 and 3 an embodiment of a liquid one/liquid of heat exchanger in radial and axial view.

A heating or an air conditioning system according to invention 10 for a motor vehicle exhibits a cold circle 12, existing from a compressor 14, a condenser 16, an expansion organ 18 and an evaporator 20. The condenser 16 can serve also for the heating a passenger compartment of the motor vehicle which can be supplied the air. The evaporator 20 is 22 formed as liquid ones/liquid heat exchangers.

Over the liquid ones/liquid heat exchanger 22 the cold circle with an engine cooling circuit is 24 coupled. The engine cooling circuit serves mainly for the cooling of a drive motor 25 by means of a refrigerant. Over the liquid ones/liquid heat exchanger 22 warm one of the refrigerant can become on the refrigerant of the cold circle 12 transmitted. The engine cooling circuit 24 exhibits an other heat exchanger 26 to the discharge of warm ones of the refrigerant to the environment.

Additional ones are in the refrigerant circuit 24 heating mediums provided not represented more near to the separate heating of the refrigerant. These heating mediums can be for example immediate into the refrigerant circuit 24, for example at the 30 locations of the refrigerating cycle referred with the numerals 28 or 24, incorporated. Electric glow pins could become for example as heating mediums inserted.

Alternate ones could be the heating mediums in the liquid ones/liquid heat exchanger 22 integrated and be for example as PTC heating elements or other electric heating mediums formed.

The liquid one/liquid heat exchanger 22 is in an embodiment of the invention formed by the refrigerant a guiding tube 32, on in or several, the refrigerant guiding tube and/or. Tubes 34 wound or in suitable way applied is and/or. are, so that the tubes 32 and 34 are located with one another in thermal connection and a warm transfer of refrigerants flowing in direction of arrow 36 is on 42 refrigerants possible flowing in direction of arrow 38, 40 and. There is also different constructions of liquid ones/liquid heat exchangers more conceivable.

Claims

1. Heating or air conditioning system for a motor vehicle with a cold circle (12), existing from a compressor (14), a condenser (16), an expansion organ (18) and an evaporator (20) and with an engine cooling circuit (24) and with a liquid one/a liquid heat exchanger (22), with which warm one of a refrigerant of the engine cooling circuit (24) is more transferable on the refrigerant of the cold circle (12), whereby for the transmission the warm one serves the liquid one/liquid heat exchanger (22) as evaporator (20) of the cold circle (12) and the cold circle (12) as heat pump works, characterised in that heating medium provided is, to the separate Heating of the refrigerant.

2. Heating and air conditioning system according to claim 1 characterised in that the heating mediums in the liquid ones/liquid heat exchanger (22) integrated are.

3. Heating and air conditioning system according to claim 1 or 2, characterised in that of the liquid ones/liquid heat exchanger (22) formed is by the refrigerant a guiding tube (32), on which the refrigerant is a guiding tube (34) wound.